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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Yukio Arima

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EXAMINER

RIZK, SAMIR WADIE

ART UNIT

PAPER NUMBER

2112

MAIL DATE

DELIVERY MODE

11/18/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/591,457	Applicant(s) ARIMA ET AL.	
	Examiner SAM RIZK	Art Unit 2112	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☒ Claim(s) 2-7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

- Response to the applicant's amendment dated 7/15/2009
- Claims 1-7 are pending
- Claim 1 has been rejected
- Claims 2-7 have been objected to

Response to Arguments

1. Applicant's arguments see pages 2-4, filed on 7/15/2009, with respect to the rejection of claim 1 under section 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Kim et al. US patent no. 6483881 (Hereinafter Kim) and in further view of the Applicant Admitted Prior Art (AAPA).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
2. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (US patent no. 6483881) and further in view of Applicant admitted Prior Art (AAPA).
3. In regard to claim 1, AAPA teaches;
- An ACS circuit, which receives differential branch metrics (hereinafter referred to as "DBMs"), each of which is a difference between any two branches related to Viterbi decoding, (page 3, lines (2-6) in AAPA) performs additions of the received DBMs to differential path metrics (hereinafter referred to as "DPMs"), (page 3, lines (6-20) in AAPA) each of which is a difference between any two states, and compares resultant DPMs obtained after the additions to select the most likely paths, wherein of the DPMs,
- However, the Applicant in the AAPA does not teach:
- basic DPMs, each of which is a DPM between a path metric for a reference state and a path metric for another state, are retained and the most likely paths are selected according to the basic DPMs.
- Kim in an analogous art that teach method of reducing complexity using statistic to reduce path metrics in a trellis decoder teaches:
- basic DPMs, each of which is a DPM between a path metric for a reference state and a path metric for another state, are retained and the most likely paths are selected according to the basic DPMs.

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(col. 5, lines (49-67) through col. 6, lines (1-25) in Kim)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of AAPA with the teaching of Kim that comprise use of reference path metric method to reduce complexities of ACS calculations.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized the need for reducing the complexity of ACS computations in a trellis decoder.

Allowable Subject Matter

4. Claims 2-7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance:

5. Claim 2 of the present application teach for example:

The ACS circuit of Claim 1, comprising:

a basic DPM retaining section for retaining the basic DPMs;

a basic DPM calculating section for calculating the basic DPMs;

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a reference DPM calculating section for calculating reference DPMs, which are DPMs other than the basic DPMs and necessary for the basic DPM calculation by the basic DPM calculating section;

a basic DBM calculating section for calculating basic DBMs of the DBMs, the basic DBMs being necessary for the basic DPM calculation by the basic DPM calculating section; and

a path selecting section for selecting the most likely paths for the Viterbi decoding in accordance with the basic DPMs retained by the basic DPM retaining section, the reference DPMs calculated by the reference DPM calculating section, and the basic DBMs calculated by the basic DBM calculating section, wherein the basic DPM calculating section calculates new basic DPMs in accordance with the basic DPMs retained by the basic DPM retaining section, the reference DPMs calculated by the reference DPM calculating section, the basic DBMs calculated by the basic DBM calculating section, and results of the most likely path selection by the path selecting section.

The foregoing limitations are not found in the prior art of record.

Particularly, none of the prior arts of record teach nor fairly suggest the emphasized limitation as cited in the independent claim 15 that comprise:

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The ACS circuit of Claim 1, comprising:

a basic DPM retaining section for retaining the basic DPMs;

a basic DPM calculating section for calculating the basic DPMs;

a reference DPM calculating section for calculating reference DPMs, which are DPMs other than the basic DPMs and necessary for the basic DPM calculation by the basic DPM calculating section;

a basic DBM calculating section for calculating basic DBMs of the DBMs, the basic DBMs being necessary for the basic DPM calculation by the basic DPM calculating section; and

a path selecting section for selecting the most likely paths for the Viterbi decoding in accordance with the basic DPMs retained by the basic DPM retaining section, the reference DPMs calculated by the reference DPM calculating section, and the basic DBMs calculated by the basic DBM calculating section, wherein the basic DPM calculating section calculates new basic DPMs in accordance with the basic DPMs retained by the basic DPM retaining section, the reference DPMs calculated by the reference DPM calculating section, the basic DBMs calculated by the basic DBM calculating section, and results of the most likely path selection by the path selecting section.

6. Claims 3-7 depend from claim 2.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Rizk whose telephone number is (571) 272-8191. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Scott Baderman can be reached on (571) 272-3644. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronics Business Center (EBC) at 866-217-9197 (toll-free)

/Sam Rizk/

Primary Examiner, Art Unit 2112